IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	)	(Parent Case:
	)	Art Unit: 2854
Sunada et al.	)	Examiner: Williams, K.)
	)	
Serial No. Unknown	)	
	)	
Filed: 10/30/2001	)	
	)	
For: INNER PAPER GUIDE FOR MEDIA SHAPE CONTROL IN A PRINTER	)	
_____	)	

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

Prior to examining this case on the merits, kindly amend the application as follows:

IN THE SPECIFICATION

Replace the paragraph appearing at page 1, line 28, to page 2, line 5, with the following:

--A problem arises in that the trailing edge 12A of the picked sheet is unconstrained after leaving the pick roller. Because of the stresses applied to the picked sheet in the print zone, the unconstrained shape of the sheet after leaving the pick roller is significantly rotated about the forward pinch roller 16. This is illustrated in FIG. 1, in which the constrained state prior to leaving the pick roller 10 and pinch roller 13 is indicated as sheet 12 with trailing edge 12A, and the unconstrained state is indicated as sheet 12' with trailing edge 12A'. This results in a rapid print medium shape change in

stiff media that can cause an effective overfeed as seen by the print head just downstream of the nip between the drive roller and pinch roller. The effective overfeed causes a print defect, known as a "bottom of form" (BOF) print defect. This print defect is often quite visible on images printed on premium photo paper, for example.--

Replace the paragraph appearing at page 4, lines 3-8, with the following:

--In accordance with an aspect of the invention illustrated in FIG. 3, the media path between the pick roller and the drive roller is defined by an upper guide surface 62 and a lower guide surface 64. The lower guide surface constrains the movement of the trailing edge 12A'' of the sheet 12'' resulting in the constrained sheet shape illustrated in FIG. 3. This prevents rotation of the paper about the front pinch roller 58, as would otherwise occur in the absence of a lower guide surface.--

Replace the paragraph appearing at page 4, lines 9-16, with the following:

--In exemplary embodiments, the spacing between the upper guide surface 62 and the lower guide surface 64 is increased from the media entrance location adjacent the pick roller to the media exit location adjacent the drive roller, thus providing a tapered media path between the guide. The spacing distance between them will depend on the particular system and media requirements; a typical range is from .5 mm to 5 mm. In an exemplary embodiment for addressing BOF print defects, the spacing between the upper and lower

guide surfaces is from 2.9 mm at the media entrance location to 3.6 mm at the media exit location adjacent the drive roller.--

Replace the paragraph appearing at page 6, line 33 to page 7, line 17, with the following:

--Referring now to FIG. 6, the media handling system of the printer 100 includes an upper media or paper guide structure 140 providing an upper guide surface 140A, which together with a portion of the curved guide surface 156 extends along the media path portion 145 extending between the pick roller and the drive roller. A lower media or paper guide structure 142 provides a lower guide surface in accordance with the invention, constraining the movement of the picked sheet in the portion of the paper path between the pick roller and the drive roller. For static control, the guide structure 142 is formed with a plurality of spaced ribs 142A extending along the media path direction and protruding from the structure surface 142B. The ends of the ribs provide the media contacting surfaces. The pick roller structure includes three spaced pick wheels 130 mounted on a shaft 144 for rotation. Wheels 146 are provided to assist in proper advancement of media such as envelopes through the media path. Slots 142C are formed in the guide structure 142 to allow the media contacting surface to extend between the rollers to provide support and prevent deformation of the print media in the regions between the rollers 130 and 146, as is more generally illustrated in FIG. 4.

The spacing between the guide surfaces of the lower guide 142 and the upper guide surface defined in this exemplary embodiment by a portion of the curved surface 156 is preferably as small as possible for a given application. An exemplary suitable range for this spacing is between .5 mm and 2.0 mm.--

IN THE CLAIMS

Cancel Claims 1-13 without prejudice or disclaimer of the subject matter contained therein.

14. A media handling system for handling sheets of media, comprising:

a pick roller structure having a circumferential media-contacting surface and arranged for rotation about a roller axis to contact and pick a sheet from an input source;

a drive roller structure arranged for rotation about a drive roller axis;

a media path extending between the pick roller structure and the drive roller structure;

a first guide structure positioned along a first longitudinal edge of the media path and providing a first media guide surface above the sheet when passing along the media path;

a second guide structure positioned along a second longitudinal edge of the media path and providing a second media guide surface below the sheet when passing along the media path;

the media path between the first guide structure and the second guide structure has a media entrance adjacent the pick roller structure and a media exit adjacent the drive roller structure, the first and second guide surfaces positioned such that a distance between the first and second guide surfaces in the media path is sufficiently small at said media entrance to constrain the movement of a trailing edge of the media sheet as the trailing edge leaves the pick roller between the pick roller structure and the drive roller structure to minimize trailing edge print defects.

15. The system of Claim 14 wherein said distance is greater at the media exit than at the media entrance.

16. The system of Claim 15 wherein said distance increases gradually from the media entrance to the media exit.

17. The system of Claim 14 wherein said distance is in the range between .5 mm and 5 mm.

18. The system of Claim 14 wherein the pick roller structure includes a plurality of spaced pick roller wheels, and wherein a corresponding plurality of pinch wheels are arranged to create nips between respective pick roller wheels and pinch wheels, and wherein the second guide structure is arranged to constrain and support a sheet of print media at regions between the nips, thereby reducing deformation of the sheet due to stresses exerted on the print medium at the nips.

19. The system of Claim 18 wherein said distance between the first guide structure and the second guide structure at said nips is in the range of .5 mm to 2 mm.

20. An inkjet printer with improved media control to reduce trailing edge print defects, comprising:

an input tray for holding a stack of sheets of print media;

an output tray for receiving output sheets of media subsequent to printing operations;

a media path extending between the input tray and the output tray;

a pick roller structure disposed on the media path having a circumferential media-contacting surface and arranged for rotation about a roller axis to advance a sheet along the media path from the input tray;

a pick pinch roller structure arranged relative to the pick roller structure to define a pinch nip therebetween;

a drive roller structure disposed on the media path downstream of the pick roller structure and arranged for rotation about a drive roller axis;

a drive pinch roller structure arranged relative to the drive roller structure to define a drive nip therebetween;

a first guide structure positioned along a first longitudinal edge of the media path between the pick roller structure and the drive roller structure and providing a first media guide surface, said first guide surface being above a top surface of said sheet;

a second guide structure positioned along a second longitudinal edge of the media path between the pick roller structure and the drive roller structure and providing a

second media guide surface, said second guide surface being below a bottom surface of said sheet;

said media path being between the first guide structure and the second guide structure and having a media entrance adjacent the pick roller structure and a media exit adjacent the driver roller structure, and wherein a width of the media path defined by a distance between the first guide structure and the second structure is sufficiently small at the media entrance to constrain the movement of a trailing edge of a media sheet to minimize trailing edge print defects.

21. The printer of Claim 20 wherein the width of the media path is greater at the media exit than at the media entrance.

22. The printer of Claim 21 wherein the width of the media path increases gradually from the media entrance to the media exit.

23. The printer of Claim 20 wherein the width between the first guide surface and the second guide surface is in the range between .5 mm and 5 mm.

24. The printer of Claim 20 wherein the pick roller structure includes a plurality of spaced pick roller wheels, said pick pinch roller structure includes a corresponding plurality of pinch wheels arranged to create a plurality of pick nips between respective pick roller wheels and pinch wheels, and wherein the second guide structure is arranged to constrain and support a sheet of print media at regions between the plurality of pick nips,

thereby reducing deformation of the sheet due to stresses exerted on the print medium at the nips.

25. The printer of Claim 24 wherein said width of the media path between the first guide structure and the second guide structure at said plurality of pick nips is in the range of .5 mm to 2 mm.

26. The printer of Claim 24 wherein the width of the media path is greater at the media exit than at the media entrance.

Respectfully submitted,

Dated: 10/30/01

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PATENT APPLICATION

ATTORNEY DOCKET NO. 10991022-8

IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Batch No.:

Inventor(s): SUNADA et al.

Confirmation No.:

Application No.:

Examiner:

Filing Date: Oct 30, 2001

Group Art Unit:

Title: INNER PAPER GUIDE FOR MEDIA SHAPE CONTROL IN A PRINTER

OFFICIAL DRAFTSPERSON
Drawing Processing Branch
Washington, D.C. 20231

DRAWING TRANSMITTAL LETTER

Sir:

Enclosed herewith please find:

(X) 2 sheets of redlined drawing(s) which indicate proposed changes to the drawing(s). Upon approval of these proposed changes, formal drawing(s) will be submitted.

( ) _____ sheets of corrected formal drawing(s), as required by the Notice of Patent Drawings Objection (PTO-948) which accompanied the Office Action dated_____ .

( ) _____ sheets of corrected formal drawing(s), as required by the Notice of Patent Drawings Objection (PTO-948) and approved in the Notice of Allowability dated_____.

( ) _____ sheets of formal drawing(s). Please substitute these formal drawing(s) for the informal drawing(s) originally filed.

( ) _____

Examiner's approval of the entry of these drawings is respectfully requested. No new matter has been added.

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Washington, D.C. 20231.

Date of Deposit: **Oct 30, 2001**

Typed Name: **Colette Angle-Olson**

Signature: Colette Angle-Olson

Respectfully submitted,

SUNADA et al.

By Larry K. Roberts

Larry K. Roberts

Attorney/Agent for Applicant(s)
Reg. No. **28,464**

Date: **Oct 30, 2001**

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Rev 10/01 (Dwgtrans)

FIG. 3

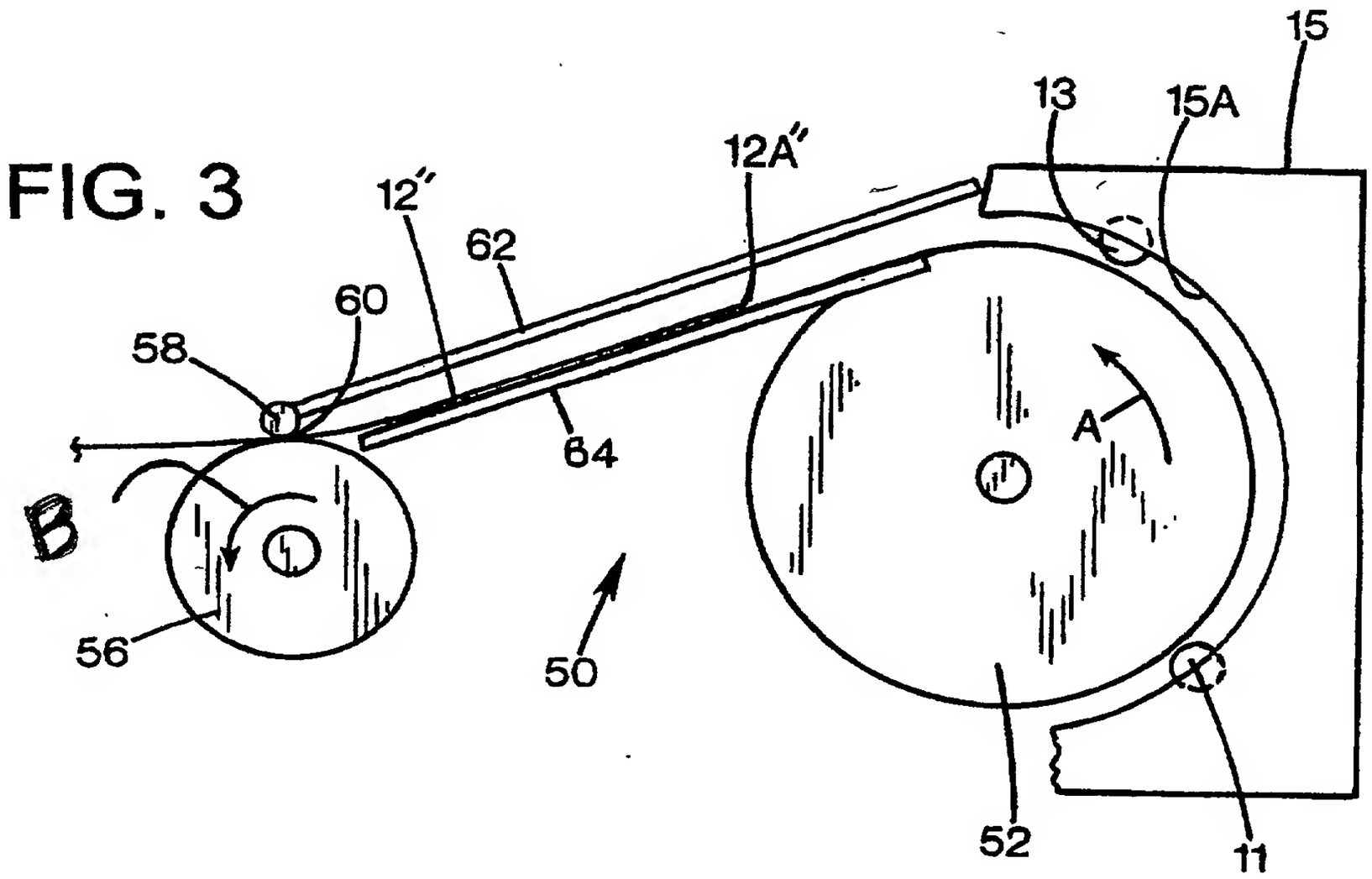

15
13
15A
12A"
12"
62
60
58
64
B
A
56
50
52
11

FIG. 4

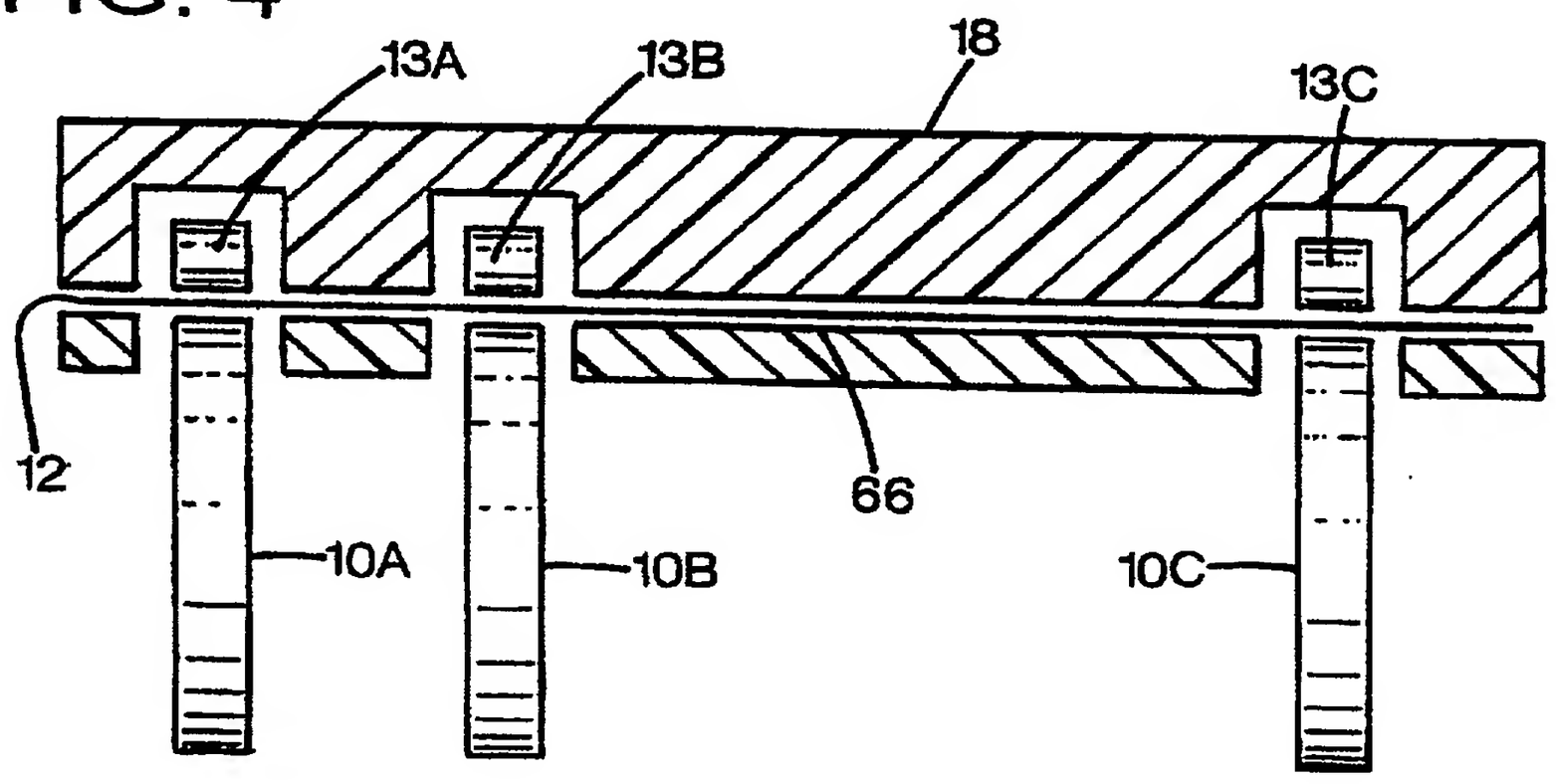
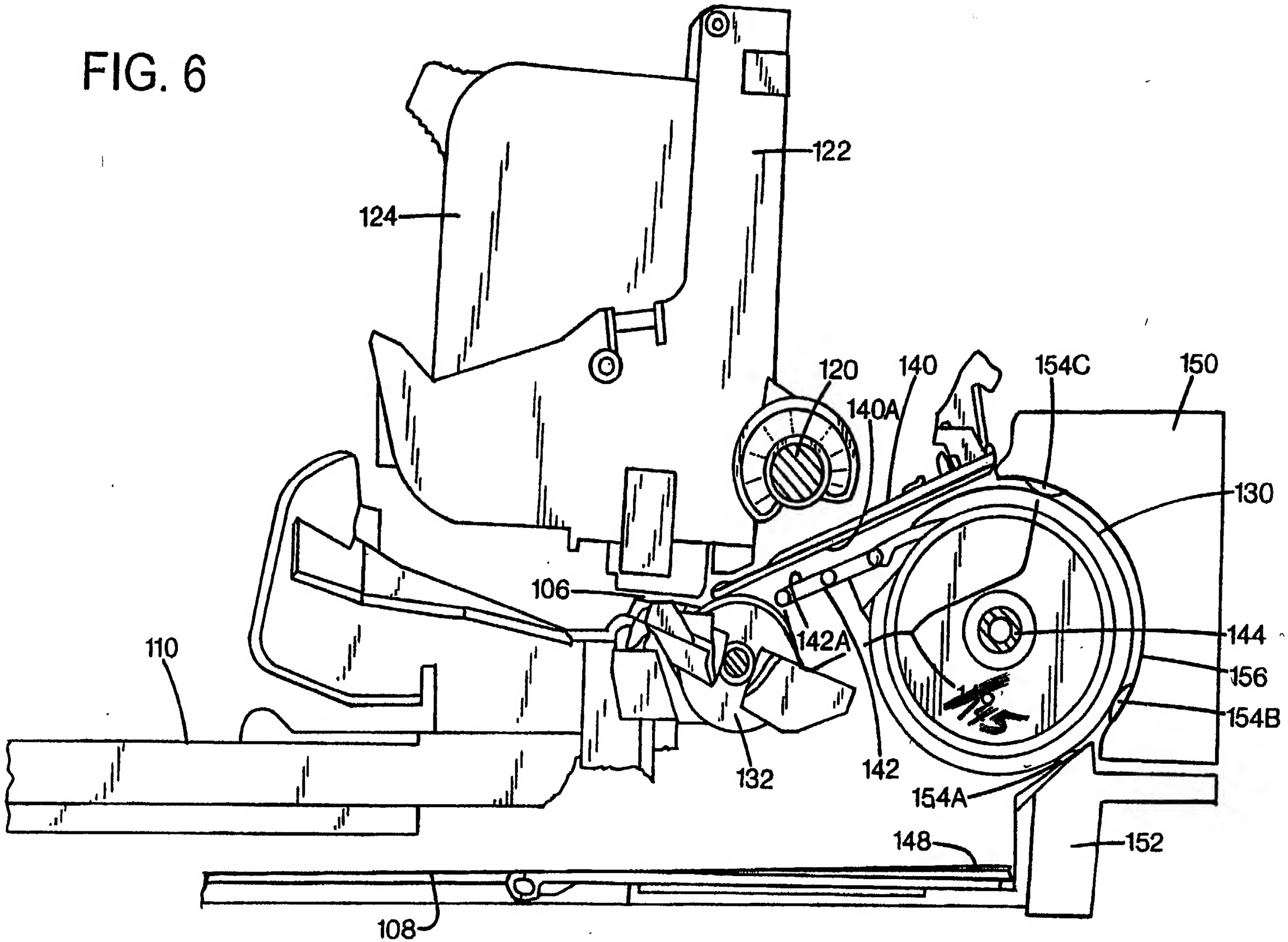

13A
13B
18
13C
12
66
10A
10B
10C

FIG. 6


122
124
120
140
140A
154C
150
130
106
144
142A
156
154B
110
132
142
154A
148
152
108